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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 09/710,830   | 11/13/2000  | Brian J. Minnis      | PHB 34,414          | 5784             |
| 24737  | 7590        | 09/15/2005           | EXAMINER            |                  |
| PHILIPS INTELLECTUAL PROPERTY & STANDARDS<br>P.O. BOX 3001<br>BRIARCLIFF MANOR, NY 10510 |             |                      | WANG, TED M         |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 2634                |                  |
| DATE MAILED: 09/15/2005  |             |                      |                     |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                 |               |  |
|------------------------------|-----------------|---------------|--|
| <b>Office Action Summary</b> | Application No. | Applicant(s)  |  |
|                              | 09/710,830      | MINNIS ET AL. |  |
|                              | Examiner        | Art Unit      |  |
|                              | Ted M. Wang     | 2634          |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on 05 July 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 7 and 9-12 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments, filed on 9/2/2005, have been fully considered but they are not persuasive. The Examiner has thoroughly reviewed Applicants' arguments but firmly believes that the cited reference to reasonably and properly meet the claimed limitations.

#### Claims 1-4, 6, 7, and 9-12

(1) Applicants' argument – "Applicant, however, disagrees with the statement made in the Office Action with regard to the implication that a harmonic filter is the same as a low-pass. Rather as the written description of the instant application states the non-linearities in the limiting amplifiers generate harmonics of the wanted signal . . . As these harmonics are displaced symmetrically about zero frequency then if it is decided to remove them by filtering it is desirable to continue with the complex signal processing and to use a polyphase device as the harmonic filter" (see page 6, lines 9-15) (emphasis added). Hence, as the written description makes clear, harmonics are generated on either side of a center frequency and the harmonic filter described removes harmonics on either side of the center frequency. As is further noted in the written description the discriminator is centered on IF of 864 kHz, and the harmonic filter is required to remove harmonics above and below the IF center frequency." as recited.

Examiner's response – In response to applicant's argument as addressed in the above paragraph, first, the harmonic filter 40 of the instant application is connected to the output of soft-limiting amplifier 36, 38 to filter out the unwanted harmonic

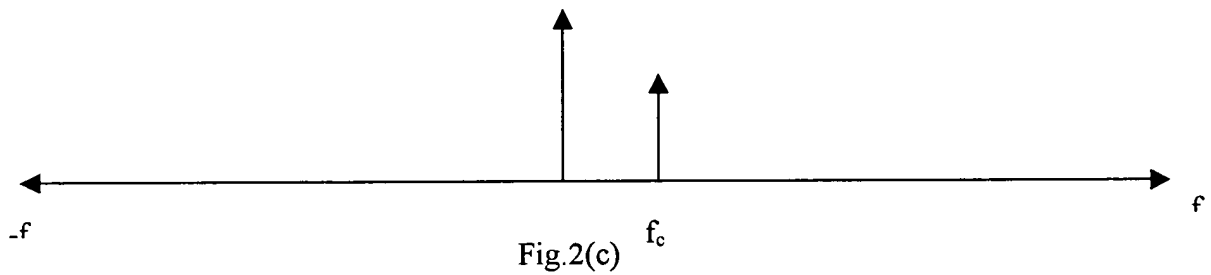
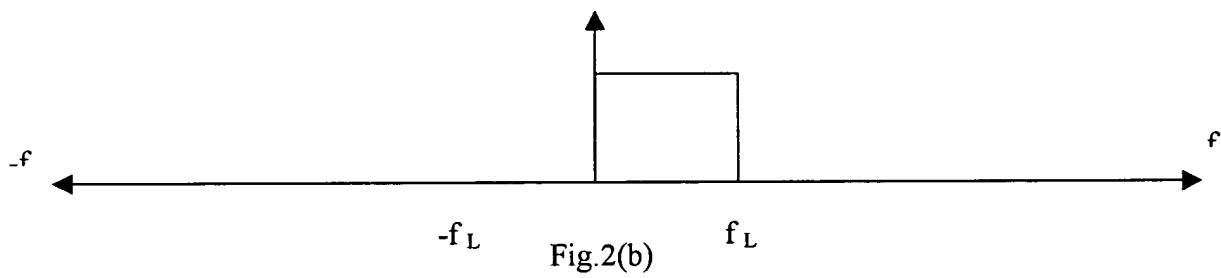
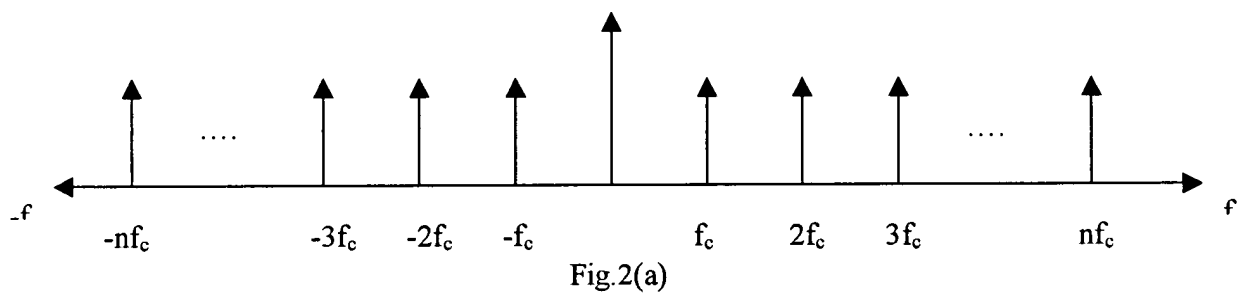
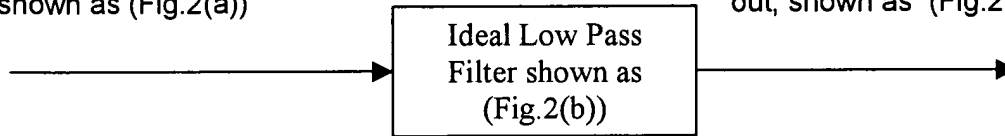
generated by these amplifiers 36, 38 (refer to page 6 lines 9-13 of the instant application). By definition, from Merriam-Webster's Collegiate Dictionary, "harmonic" means "a component frequency of a complex wave that is integral multiple of the fundamental frequency. Therefore, the main purpose of the harmonic filter 40 is to filter out the unwanted higher frequencies or unwanted harmonic frequencies that are integral multiple of the fundamental frequency. This harmonic filter will not remove harmonics below the IF center frequency since there is no harmonic lower than that of fundamental frequency generated by the non-linear soft-limiting amplifiers, 36, 38. Second, page 6, lines 9-15, of the instant application cited by the applicant merely describes a signal property in the frequency domain. In frequency domain, the signal is symmetrically placed about zero frequency (but not center frequency) with positive frequency ( $f$ ) and negative frequency ( $-f$ ), so does any of the harmonic frequency. The non-linear soft-limiting amplifiers, 36, 38, do not generate harmonics on either side of a center frequency. Instead, they generate the harmonics that are integral multiple of the fundamental frequency (864kHz) and are symmetrically placed about zero frequency. Thus, for the explanation addressed in the above paragraph, the rejection under 35 U.S.C. 103(a) with Tomlinson and Dadies' references are adequate.

Attached Fig.1 and 2 are the example of a low pass filter that acts as a harmonic filter, where  $f_c$  is the wanted frequency,  $2f_c, 2f_c, \dots, nf_c$  are the harmonics,  $f_L$  is the cut frequency of a Low Pass Filter,  $f_c < f_L < 2f_c$ .

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Input signal with harmonics,  
shown as (Fig.2(a))

Output signal with harmonics filtered  
out, shown as (Fig.2(c))



***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomlinson (US 4,821,120) in view of Davie et al. (US 6,278,870).

- With regard claim 1, Tomlinson discloses a receiver (Fig.3) including a phase-quadrature IF filter (Fig.3 elements 38 and 50 and column 5 lines 44-50) that quadrature related low IF signals (Fig.3 element 50 and column 5 lines 44-50) are soft limited (Fig. 3 element 54) for adjusting the dynamic range of the quadrature related low IF signals (Fig.3 elements 48, 52, and 54 and column 5 lines 24-59) prior to being demodulated (Fig.3 element 58 and column 5 line 51 – column 6 line 17), and said receiver comprising, coupled to inputs of harmonic filtering means (Fig.3 element 56 and column 5 lines 59-60) and prior to demodulation (Fig.3 elements 54, 56, and 58, and column 5 lines 24-66), soft limiting amplifying means for adjusting the dynamic range of the quadrature related low IF signals (Fig.3 elements 48, 52, and 54 and column 5 lines 24-59) for entry into the harmonic filtering means (Fig.3 elements 54 and 56, and column 5 lines 55-60). It is inherent that a low pass filter is a harmonic filter, since low pass filter filters out all the frequency components higher than that of the cutoff frequency.

Tomlinson discloses all of the subject matter as described above except for specifically teaching the receiver is a polyphase receiver.

However, Davie et al. teaches a polyphase receiver (Fig.1).

It is desirable to have a polyphase receiver to improve the image rejection (column 1 lines 44-48) so that the receiver performance is improved. Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the receiver with polyphase filter as taught by Davie et al. in which, having polyphase filter, into Tomlinson's filter circuit to improve the image rejection so that the receiver performance is improved.

- With regard claim 2, Tomlinson further discloses a receiver including a phase-quadrature IF filter for receiving a wanted data signal modulated on a carrier signal (Fig.3 element 30) and for producing quadrature related low IF signals (Fig.3 element 50 and column 5 lines 44-50), soft limiting means for compressing the dynamic range of the quadrature related low IF signals (Fig.3 elements 48, 52, and 54 and column 5 lines 24-59) and signal demodulation means for recovering the data signal (Fig.3 elements 54, 56, and 58, and column 5 lines 24-66). All other limitation can further be taught in claim 1. The explanation of all the limitation is already addressed in the above paragraph.
- With regard claim 3, Tomlinson further discloses wherein said harmonic filtering means for filtering the quadrature related low IF signals (Fig.3 elements 38 and 50 and column 5 lines 44-50), said receiver further including signal demodulation means for recovering the wanted data signal (Fig.3 elements 54, 56, and 58, and column 5 lines 24-66).

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- With regard claim 4, Tomlinson discloses all of the subject matter as described above except for specifically teaching the harmonic filtering means comprises polyphase filtering means.

However, Davie et al. teaches a polyphase filtering means (Fig.1 element 24, Abstract lines 3-5, and column 2 lines 24-39).

It is desirable to have a polyphase filter to improve the image rejection (column 1 lines 44-48) so that the performance of the receiver is improved. Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the polyphase filter as taught by Davie et al. in which, having polyphase filter, into Tomlinson's filter circuit to improve the image rejection so that the performance of the receiver is improved.

- With regard claim 6, which is a receiver claim related to claim 2, all other limitation is contained in claim 2. The explanation of all the limitation is already addressed in the above paragraph.

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomlinson (US 4,821,120) and Davie et al. (US 6,278,870) as applied to claim 2 above, and further in view of Durvaux et al. (US 5,703,910).

- With regard claim 7, Tomlinson and Davie et al. disclose all of the subject matter as described above except for specifically teaching that the signal demodulation comprises a polyphase discriminator.

However, Durvaux et al. teaches the signal demodulation comprises a polyphase discriminator (column 1 lines 34-55, column 2 lines 4-10, and column 4 lines 3-7).



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It is desirable having a signal demodulation comprises a polyphase discriminator to improve the implementation complexity (column 4 lines 3-7) so that system cost is reduced. Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include a signal demodulation as taught by Durvaux et al. in which, the signal demodulation comprises a polyphase discriminator, into Tomlinson and Davies' demodulator circuit to improve the implementation complexity so that system cost is reduced.

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomlinson (US 4,821,120) and Davie et al. (US 6,278,870) as applied to claims 1 and 2 above, and further in view of Bijker et al. (US 5,404,589).

- With regard claim 9, Tomlinson and Davie et al. disclose all of the subject matter as described above except for specifically teaching that the polyphase receiver is integratable.

However, Bijker et al. teaches that the polyphase receiver is integratable (column 3 lines 21-44).

It is desirable that the polyphase receiver is integratable to reduce the system size so that the receiver product cost is reduced.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include a polyphase receiver as taught by Bijker et al. in which, the polyphase receiver is integratable, into Tomlinson and Davies' receiver to reduce the system size so that the receiver product cost is reduced.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomlinson (US 4,821,120) and Davie et al. (US 6,278,870) as applied to claims 1 and 2 above, and further in view of McDowell et al. (US 6,078,799).

- With regard claim 10, Tomlinson and Davie et al. disclose all of the subject matter as described above except for specifically teaching an integrated transceiver.

However, McDowell et al. teaches an integrated transceiver (Fig.1 elements 105 and 125, Fig.3A and 3B elements 305 and 315, and column 1 lines 21-43).

It is desirable to have an integrated transceiver to reduce the system size so that the receiver product cost is reduced.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include an integrated transceiver as taught by McDowell et al. in which, the transmitter and receiver are integratable, into Tomlinson and Davies' receiver to reduce the system size so that the receiver product cost is reduced.

7. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomlinson (US 4,821,120) and Davie et al. (US 6,278,870) as applied to claims 1 and 2 above, and further in view of Haartsen (US 6,081,697).

- With regard claim 11, Tomlinson and Davie et al. disclose all of the subject matter as described above except for specifically teaching amplifying means comprises separate, respective amplification means for said inputs.

However, Haartsen et al. teaches the amplifying means comprises separate, respective amplification means for said inputs (Fig. 2 elements 250 and 295, column 5 lines 4-35, and Fig.3 elements 340 and 390).

It is desirable to include the limitation of amplifying means comprises separate, respective amplification means for said inputs to improve image rejection (column 2 lines 49-59) so that the performance of the receiver is improved.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include an polyphase receiver as taught by Haartsen et al. in which, the amplifying means comprises separate, respective amplification, into Tomlinson and Davies' receiver to improve the image rejection so that the performance of the receiver is improved.

- With regard claim 12, all limitation is contained in claim 2 and 11. The explanation of all the limitation is already addressed in the above paragraph.

#### ***Allowable Subject Matter***

8. Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and if rewritten to overcome the objection(s) set forth in this Office action.

#### ***Conclusion***

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

10. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened

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statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted M. Wang whose telephone number is 571-272-3053. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571-272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ted M Wang  
Examiner  
Art Unit 2634

Ted M. Wang

  
**STEPHEN CHIN**  
**SUPERVISORY PATENT EXAMINEE**  
**TECHNOLOGY CENTER 2600**